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Quantitative Guidance for Stove Usage and Performance to Achieve Health and Environmental Targets

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Figure S1. The impact of multiple stove use on air pollutant concentrations in the kitchen as estimated with a single zone air quality model. Modeled 24 hour mean PM_{2.5} and CO concentrations across a range of traditional charcoal stove displacement scenarios, which include traditional charcoal usage combined with stoves representing Indoor Emissions Tier 1, 2, 3, and 4. Graphs 2A and 2B show the linear relationships between traditional charcoal stove displacement with a new stove and indoor concentrations for PM_{2.5} (A) and CO (B). Graphs 2C and 2D show the specific contributions from the traditional charcoal stove and Indoor Emissions Tier 1-4 stoves to 24 hour PM_{2.5} and CO concentrations under the different performance-usage scenarios. Notes: TCS = traditional charcoal stove; source for WHO Annual Interim 1 Target PM_{2.5} (WHO 2006), source for WHO 24 hour CO guideline (WHO 2010).

Figure S2. The impact of multiple stove use on air pollutant concentrations in the kitchen as estimated with a single zone air quality model. Modeled 24 hour mean PM_{2.5} and CO concentrations across a range of three-stone-fire displacement scenarios, which include three-stone-fire usage combined with stoves representing Indoor Emissions Tier 1, 2, 3, and 4. Graphs 2A and 2B show the linear relationships between three-stone-fire displacement with a new stove and indoor concentrations for PM_{2.5} (A) and CO (B). Boundaries of the IWA 11:2012 indoor emissions tiers have been added to illustrate the range of outcomes possible within each respective tier. Notes: TSF = three-stone-fire; source for WHO Annual Interim 1 Target PM_{2.5} (WHO 2006), source for WHO 24 hour CO guideline (WHO 2010).

Figure S3. Modeled relationships between three-stone-fire displacement and fuel savings for different performance-usage scenarios, estimated by the ratio of thermal efficiencies of the new to traditional stoves and the percent displacement of the traditional stove. Boundaries of the IWA

11:2012 fuel efficiency tiers have been added to illustrate the range of outcomes possible within each respective tier. Notes: TSF = three-stone fire. TCS = traditional charcoal stove.

Table S1: ISO IWA Tiers for Indoor Emissions and Efficiency.

References